

A STUDY OF THE NATIVE HINDUSTANI
MELODY PATTERN AND THE ACQUIRED
ENGLISH MELODY PATTERN WITH SPECIAL
REFERENCE TO THE TEACHING OF ENGLISH
IN INDIA

BY

KATAYUN H. CAMA.

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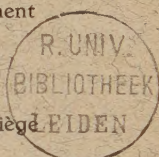
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A STUDY OF THE NATIVE HINDUSTANI MELODY
PATTERN AND THE ACQUIRED ENGLISH MELODY
PATTERN WITH SPECIAL REFERENCE TO THE
TEACHING OF ENGLISH IN INDIA ¹⁾

BY

KATAYUN H. CAMA.

The twofold purpose of this study was (1) to determine objectively the difference between the native melody pattern of Hindustani and the melody pattern of English, as spoken by Indians; and (2) to utilize the pedagogical implications arising therefrom for the deduction of a method of teaching English in India.

Experimental Procedure.

Subject. Nine subjects were selected. Of these, six were Indian, and three English. In order to eliminate the problem of dialect, all nine subjects were chosen primarily on the basis of linguistic background and history indicating their familiarity with the Hindustani and English of the average educated Hindustani-speaking Indian and of the middle-class, educated Englishman. All the three English subjects were graduates of Oxford, while of the six Indian subjects, only one had received part of his university training in London, England. Of the six Indians, three were Muslim and three Hindu, and of these, one Muslim and two Hindu subjects had been domiciled in the United States for approximately the past fifteen years, while the rest of the Indians had been in the United States between two to three years at the

¹⁾ A résumé of the dissertation submitted by the author to the University of Michigan in June, 1938, as partial fulfillment of the requirements for the degree of Doctor of Philosophy. This study was conducted in the Phonetics Laboratory of the University of Michigan under the direction of the following committee: Professors CLARENCE L. MEADER, JOHN H. MUYSKENS, AMOS R. MORRIS, CLIFFORD O. WOODY, WILLIAM C. TROW and DR. HIDE H. SHOHARA.

time their speech records were made. Of the three Englishmen, one had been in the United States for the past seven years, one for two years and one for thirteen months. All the English and Indian subjects were male.

Materials. Seven short sentences of very simple meaning and emotional content were used for the experiment. They were selected on the basis of familiarity in everyday usage, and of simplicity and directness of expression involving no subtle implications of emotional or intellectual concepts. As this was not a study in the ability to perceive meaning and express it in words, but rather of intonation curves in natural, ordinary conversation, no attempt was made to give any specific meaning or milieu or content to any of the sentences. Each sentence was chosen for being self-explanatory and obvious in meaning. The seven Hindustani sentences were so framed as to be identical in meaning and idiom content rather than as literal translations of the seven English sentences. The sentences follow:

1. *Simple statement.*

Thanks, I've had lunch already.

2. *Simple question.*

Will you have tea or coffee?

3. *Bewilderment.*

What on earth are you driving at?

4. *Annoyance.*

For heaven's sake stop that noise!

5. *Sadness.*

Without her, life is empty.

6. *Anger.*

Get out of here, you blooming fool!

7. *Terror.*

Look out! You'll get killed!

The following Hindustani equivalents of the English sentences are given in the International Phonetic Alphabet:

1. *Simple Statement.*

ʃukria, mæ ʌbhi ʒana ʒa tʃuka hun.

2. *Simple question.*

ap kja plenge, tʃæ ja kafi?

3. *Bewilderment.*

aʒɪr apka mənʃa kja hæ?

4. *Annoyance.*

ʒuda ke lie je ʃor bənd bhi kəro.

5. *Sadness.*

dʒ.ʌb wo nəhɪn to fɪr dʒɪna bekar!

6. *Anger.*

nɪkəl dʒao jəhaŋ se, kəmbʌʒt kəhɪn ke!

7. *Terror.*

deʒo, d.ʌb dʒao ge!

The English subjects were asked to speak each of the English sentences three times, and then all the seven sentences once consecutively. The Indian subjects were asked to speak each English sentence twice followed by the same sentence in Hindustani twice, and then all the seven English sentences once consecutively, followed by all the seven Hindustani sentences once consecutively.

Apparatus. Kymograph and phoneloscope records were made for the investigation. The kymograph set-up consisted of two drums set in motion by a one-thirtieth horsepower, one hundred and ten volt alternating current motor, carrying smoked paper belts ten feet long. The belt of smoked paper travelled at the rate of 119.5 mm per second. Over the subject's mouth and nose was placed a closefitting headpiece or receiver with two chambers, making possible separate synchronous records of (1) tone passing through the nose and (2) through the mouth, as well as simultaneous separate records of the relative breath pressure through each of the passages. This receiver was connected by means of rubber tubing with four tambours. An electrically driven tuning fork bearing a tiny quill pointer marked the time. The nasal and oral vibrations were recorded by the MUYSKENS—MOSER phonation tambours fitted with mica diaphragms, and the oral and nasal breath pressure, by the usual Marey type of metal pressure

tambours fitted with rubber dam diaphragms. On the tone diaphragms rested thinly filed, feather-weight metal pointers supported by tiny wedges of mullen pulp, and on the pressure diaphragm were glued metal wedges supporting celluloid-tipped wire pointers. For time evaluation the electrically driven tuning-fork recorded 100 double vibrations per second, and the subject was asked to speak into the mouthpiece as naturally as he could under these specially controlled conditions.

The phoneloscope records were made from phonograph records of the subjects speaking the particular set of sentences under investigation. These records were played on a turntable equipped with an electric pickup, and the vibrations of the voice were converted into electrical impulses by the electro-magnetic pickup and intensified by an amplifier. By means of a loud-speaker the impulses were then introduced into the phoneloscope where they actuated a tiny mirror which cast the reflection of a beam of light upon a moving roll of bromide paper, thus producing photographic records similar to oscillograms. The time line was photographed by means of another beam of light and an electrically driven tuning-fork bearing a small paper point, and recording 100 double vibrations per second. The simultaneous photographing of the sound waves and time vibrations provided an accurate and satisfactory means of computing the pitch of the voice.

Method of Analysis. As this was a study of melody curves in connected discourse rather than of the pitch of individual isolated sounds, the average pitch of the fundamentals of each voiced sound was calculated, the overtones being disregarded. The vibrations of each sound were identified, marked off and counted, and the waves (in the kymograms) and dots (in the phoneloscope records) in the time lines were counted. The number of vibrations for each sound was then divided by the duration of that sound in $\frac{1}{100}$ of a second, and from the pitch thus obtained, the melody curve was plotted on graph paper. The melody curves of each of the three (in the case of the Indian subjects) or four speakings (in the case of the English subjects) of each sentence of each speaker were superimposed upon one another in order to indicate the deviations in the same sentence spoken three or four times by the same subject, together with the definite melody pattern in each, in spite of the variations in time and pitch. These indivi-

dually superimposed graphs of all the nine subjects were plotted on one sheet of graph paper for each sentence, with those of three Indians in the first row; of the three Englishmen in the second row, and of the other three Indians in the third row in order to furnish a picture of the melody patterns of all the subjects for the same sentence.

For a comparative study of these curves, however, a composite of the pitch of the sounds in the three or four speakings of each sentence by each subject was needed. As it was impossible to take the average of the pitch in the three or four speakings because of the wide deviations, the pitch of each voiced sound for the first three speakings of each subject was converted into an abstract index t , and the average of the t 's of the three speakings was computed and graphed. The t represents each deviation expressed as a ratio of the standard deviation of all the observations, or a percentage of one deviation to all the deviations, which, in effect, is an abstract and comparable index. Expressed in terms of a formula, $t = \frac{v - M}{\sigma}$. For example, if the actual pitch for

α in "Thanks" of each of the nine subjects is 155, 157, 158, 190, 120, 180, 162, 164, 175 respectively, the standard deviation = $1/9 \sqrt{9 \cdot \Sigma x^2 - (\Sigma x)^2} = 1/9 \sqrt{9 \cdot 240303 - 1461^2} = 1/9 \sqrt{28206} = 18.66$. The pitch of the first subject is 155, therefore that pitch in terms of t will be $\frac{v - M}{\sigma}$ that is, $155 - \frac{1461}{9} = -.39$.

Similarly, the pitch in terms of t for the second subject will be $-.29$, and of the fourth subject will be $+1.48$ and so on for all the subjects. Plotting the " t " averages on graph paper gave not only a composite picture of each sentence of each subject, but showed up many factors and details not indicated in the melody curve graphs, such as the relative height or lowness of the pitch of each subject's voice in comparison with that of the others; the comparative evenness or sharp rise and fall in the pitch and the continuous rise or continuous fall or repeated rise and fall.

Summary and conclusions. The principle prompting this study is that melody and rhythm are fundamental to language; that there is a difference in the melody of different languages; and that the new language pattern superimposed on the native pattern is

influenced by the native melody. The thesis arising out of, or as a result of this investigation is that the difficulty in the acquisition of the right intonation is due primarily to the differences in the melody of the native and the acquired languages; and that this problem of intonation can be solved by proper adjustments of teaching methods.

The following are specific conclusions emerging from the study in support of the two above-mentioned general theses:

1. The Indian subjects, in general, are slower in their speech movements in English than the English subjects.
2. The Indian subjects show comparatively less variation in energy output than the English subjects, as indicated by their more or less limited range of pitch contrasted with the steep rises and sharp falls in pitch in the Englishmen.
3. The Indian subjects, in general, fail to express emotion as naturally and as forcefully in the English language as they do in Hindustani.
4. There is a distinct carry over of the Hindustani melody into English as reflected in the melody patterns of practically all the English and Hindustani sentences.
5. The shifts of energy are not as marked in the Indian subjects as in the English.
6. The Hindustani language is not characterized by monotone as Professor CHIBA ¹⁾ claims in his research on accent, but shows wide variations in pitch.
7. The variations shown by Indian subjects are, in general, confined within a comparatively small range. Those of the English cover a much wider range according to the emotion depicted.
8. Due to certain factors in the language structure the Indians show marked rise and fall in pitch under consonantal movement, while the English restrict variations of crescendo and diminuendo more or less to the vowels.

From these conclusions, it is obvious that there are outstanding differences in the melody patterns of the English and the Hindustani languages, and that the influence of the native melody on the acquired melody interferes with the intonation; particularly so in the expression of emotion.

¹⁾ Chiba, Tsutomu, *A Study of Accent: Research into its Nature and Scope in the Light of Experimental Phonetics*, Tokyo, 1935.

Pedagogical Implications and Suggestions for Language Training.

Heretofore, the problems of foreign language study have been met either by the grammatical method (which sets forth the structure of the written language as a static element, taking account of letters, spellings, grammar, etymology, syntax, functional and historical changes, giving static descriptions of sentence and word group relationships, and endeavouring to bring the whole into conformity with the logical processes), or by superficial training in phonetics, or by exercises in enunciation and pronunciation, or by the artificial aids of Linguaphone, Parlophone and the like.

That none of these methods have proved entirely satisfactory is not surprising. For, while the grammarian focuses the whole attention upon the word as seen and spelled on the printed page, the person interested in conversational language teaching focuses the entire attention upon spoken word, both being blissfully ignorant of the fact that language does not consist of mere words or ideas, but is the product of the integration of the speaker and the environment. Biologically speaking, the stimulus comes from the speaker and the response from the listener, and the integration of the whole of the life processes of the speaker as the stimulus and of the listener as the response constitutes language. Thus the bodily processes of the speaker and the listener alike are involved in a constantly changing activity. Viewed from this standpoint speech becomes a vital, living, organic system of the electro-chemical processes, energized nerves, kinesthetic sensations and moving muscles.

It will be seen from the conclusions arrived at on the basis of the findings of this objective study from kymograph and phonoscope records that the learner carries over the melody pattern of his native tongue into the foreign language, that is to say, the inability of the learner to acquire the correct intonation of a foreign language is rooted in the basic physiology and early acquired reflexes. It must also be noted that this seriously handicaps the natural expression of emotion in the foreign language, and that the maladjustment of the melody pattern leads to what is commonly known as a "foreign accent" or "brogue". The problem then seems to be one of adjustment to the melody pattern of the language to be acquired. It is obvious that what is needed is the dynamic approach of biolinguistics (with its new emphasis upon speech as a highly specific emergence from and conditioning

of certain vegetative processes of the organism such as breathing, chewing, sucking and swallowing) as opposed to the formalistic approach.

In the light of the biological reorientation then, it is necessary to postulate for the teaching of English in India, a thorough knowledge of gross and minute anatomy of the organism, of its functioning in physical and chemical terms, and of the physiological processes involved in producing effects in and receiving response from other organisms. Briefly stated, the teaching of *English* to Indians with particular reference to intonation from the biolinguistic standpoint involves a proper adjustment to the rhythm-melodic pattern of the English language. This basic rhythm-melodic pattern can be acquired (1) by melodic training through English nursery rhymes, folk songs, ballads; (2) training in shifts of energy; (3) training in breath control; and (4) training in variability in the time, pitch, intensity and accent elements of pronunciation.

These few suggestions if elaborated into a well-organized textbook, would undoubtedly help evolve a more vital, effective, organic and dynamic method of teaching foreign languages.

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